

Economic Impact of North Dakota Centers of Excellence Program, 2007

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In recent years, economic development has become increasingly linked to technology and information. As a result, policy makers have attempted to facilitate partnerships between universities and private sector businesses. The success of public-private partnerships in areas like the Silicon Valley of California, the Research Triangle of North Carolina, and the Austin, Texas area offers support for the concept of technology-based development. The Centers of Excellence program is North Dakota's initiative to participate in technology and information-based economic development.

The 2003 Legislative session authorized funding for three pilot Centers of Excellence projects. Then in 2005, the Legislature approved Senate Bill No. 2032 expanding the concept into the Centers of Excellence in Economic Development program. The legislation called for a \$50 million state investment over multiple biennia, to be leveraged on a 2-to-1 basis with private sector and federal funds. The Legislature approved \$20 million for the initiative in the 2005-07 biennium, which launched 11 different Centers throughout the state. These Centers are located in Fargo (3), Grand Forks (3), Bismarck, Valley City, Devils Lake, Dickinson, and Williston (for additional information, see Goettle 2008). The 2007 Legislature approved additional funding for the program. As of March, 2008, two Centers were fully operational, nine Centers were in the early stages of their planned activities, and three Centers were under development. In addition, two Centers had been authorized for new funding, but had not yet received funds.

The purpose of this report is to estimate the economic impacts of the Centers of Excellence program for 2007. The analysis is based on payroll and associated costs reported by each Center in their 2007 annual reports, as well as start up costs reported by the Centers.

Methods

The initial task in any impact assessment is estimating the direct impacts (or "first-round effects") of the activity being studied. In this study, information on payroll and start up costs, as well as direct employment, were drawn from the 2007 report from each Center. Other expenditures by the Centers and/or their private sector partners were assumed to bear the same relationship to payrolls as has been found in past studies of the economic impact of R&D activities (Leistritz and Coon 2008), exported services (Coon and Leistritz 2001), and manufacturing (Coon and Leistritz 1997). The North Dakota Input-Output Model was used to estimate the secondary economic impacts based on these data.

The North Dakota Input-Output Model consists of interdependence coefficients or

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multipliers that measure the level of business activity generated in each economic sector from an additional dollar of expenditures in a given sector. (A sector is a group of similar economic units, e.g., the firms engaged in retail trade make up the retail trade sector.) For a complete description of the input-output model, see Coon and Leistritz (1989). The model estimates the changes in gross business volume (gross receipts) for all sectors of the area economy resulting from the direct expenditures associated with the Centers of Excellence program. The increased gross business volumes are used to estimate secondary employment and tax revenues based on historic relationships. The procedures used in the analysis are parallel to those used in estimating the impact of other facilities and activities (Leistritz and Coon 2008; Bangsund and Leistritz 2004 & 2007, Hodur et al. 2006). Empirical testing has confirmed the model's accuracy in estimating changes in levels of economic activity in North Dakota. Over the period 1958-2006, estimates of statewide personal income derived from the model averaged within 4 percent of comparable values reported by the U.S. Department of Commerce (Leistritz et al. 1990, Coon and Leistritz 2008).

Results

The economic impact of the Centers of Excellence program was analyzed in four segments. The first of these examined impacts associated with the R&D, training, and educational activities of the Centers. Two Centers had developed important private sector partners, one in exported services and the other in manufacturing. These activities were analyzed separately. Finally, several Centers had major one-time start-up expenditures in 2007, which formed the basis for the fourth component of the analysis.

Table 1 summarizes economic impacts of the Centers' R&D and related activities. The 2007 estimated direct expenditures by the 12 Centers that reported some level of activity totaled \$27.3 million. The Centers' direct expenditures illustrate the high level of leveraging associated with the program. As of March, 2008, the total state investment of \$23 million had been leveraged with nearly \$100 million in matching funds from private and other sources (Goettle 2008). The Centers also reported 296.25 jobs, including Center and partner employees. The Centers' direct expenditures resulted in estimated secondary effects of \$55.2 million for a total impact of \$82.5 million. Estimated secondary employment was 408 jobs, for a total employment effect of 704.25.

The estimated economic impacts of the Center partner engaged in exported services are summarized in Table 2. The partner firm had direct employment of 102 and annual direct expenditures to North Dakota entities of \$7.9 million. These resulted in secondary economic impacts of almost \$16.2 million, for a total economic impact of \$24.1 million. The total employment impact was estimated at 220.

A second Center partner was engaged in manufacturing, and the economic impacts of its operations are summarized in Table 3. The firm had 95 employees and 2007 expenditures to North Dakota entities of \$4.9 million. These resulted in an estimated secondary impact of \$10.9 million for a total impact of \$15.8 million. Secondary employment was estimated at 76 jobs, for a total employment effect of 171.

The economic impacts associated with the Centers' one-time start-up expenditures in 2007 are summarized in Table 4. The one-time expenditures totaled \$18.8 million, of which \$17.7 million were to the construction sector. Four Centers had multi-million dollar construction expenditures in 2007. Total economic impacts associated with these expenditures were \$46.7 million. This level of economic activity would support about 169 jobs.

The economic impacts associated with the Centers of Excellence program in 2007 are summarized in Table 5. The direct economic impacts of Center and partner activities total \$59 million. The total economic impact (contribution) was \$169 million. Direct employment by Centers and partners totaled 493.25 and total employment effects totaled 1,264.25. These levels of increased economic activity also generate additional state tax collections. Sales and use tax collections are estimated to increase by \$1.8 million while personal income tax collections increase by \$0.9 million.

Discussion

The Centers of Excellence program is North Dakota's major initiative to participate in technology and information-based economic development. Although the program is still in its early stages and most Centers are in early stages of development, the economic effects of the program to date are encouraging. With a direct economic impact of \$59 million and total impact of \$169 million in 2007, the program's contribution to the North Dakota economy is already substantial. Further, it is noteworthy that the two operational Centers (UND Center for Innovation and NDSU Technology Incubator) are already making impressive contributions. In 2007, these two Centers combined for 233 direct jobs (Center staff plus tenants) and a payroll of \$10.7 million. As the other Centers become fully established and partner facilities are developed, the program's economic contribution can be expected to increase considerably.

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Table 1. Direct, Secondary, and Total Economic Impacts of North Dakota Centers of Excellence R & D Activities, 2007

Sector	Expenditures/Receipts		Total
	Direct	Secondary	
	-----	\$000 -----	
Communications& public utilities	730	2,796	3,526
Retail trade	4,673	17,203	21,876
Finance, insurance & real estate	5,550	3,815	9,365
Business & personal services	876	1,509	2,385
Professional & social services	876	2,188	3,064
Households	14,604	18,744	33,348
Other ¹	0	8,961	8,961
Total	27,309	55,216	82,525
Employment	296.25	408	704.25

¹ Includes agriculture, mining, construction, transportation, manufacturing, and government.

Table 2. Direct, Secondary, and Total Economic Impacts of North Dakota Centers of Excellence Partner Activities, Exported Services, 2007

Sector	Expenditures/Receipts		Total
	Direct	Secondary	
	-----	\$000 -----	
Transportation	132	81	213
Communications & public utilities	264	815	1,079
Ag. Processing & manufacturing	44	399	443
Retail trade	1,144	5,052	6,196
Finance, insurance, & real estate	1,584	1,124	2,708
Business & personal services	264	445	709
Professional & social services	88	638	726
Households	4,400	5,425	9,825
Other ¹	0	2,213	2,213
Total	7,920	16,192	24,112
Employment	102	118	220

¹ Includes agriculture, mining, construction, and government.

Table 3. Direct, Secondary, and Total Economic Impacts of North Dakota Centers of Excellence Partner Activities, Manufacturing, 2007

Sector	Direct -----	Expenditures/Receipts	
		Secondary \$000	Total -----
Construction	270	361	631
Transportation	67	52	119
Communications & public utilities	112	485	597
Ag. processing & manufacturing	607	649	1,256
Retail trade	517	3,100	3,617
Finance, insurance & real estate	1,011	683	1,694
Business & personal services	45	273	318
Professional & social services	22	374	396
Households	2,247	3,503	5,750
Other ¹	0	1,410	1,410
Total	4,898	10,890	15,788
Employment	95	76	171

¹ Includes agriculture, mining, and government.

Table 4. Direct, Secondary, and Total Economic Impacts of North Dakota Centers of Excellence, One-time Impacts of Startup Activities, 2007

Sector	Expenditures/Receipts		
	Direct	Secondary	Total
	-----	\$000	-----
Construction	17,747	978	18,725
Communications & public utilities	117	1,185	1,302
Retail trade	132	7,998	8,130
Finance, insurance & real estate	26	1,649	1,675
Business & personal services	44	568	612
Professional & social services	66	807	873
Households	744	11,495	12,239
Other ¹	0	3,131	3,131
Total	18,876	27,811	46,687
Employment	0	169	169

¹ Includes agriculture, mining, transportation, manufacturing, and government.

Table 5. Summary of Economic Impacts of the Centers of Excellence Program, 2007

Item	R&D Activities	Partner Exported Services	Partner Manufacturing	One-time Start-up	Total
Direct Impact (\$000)	27,309	7,920	4,898	18,876	59,003
Total Impact (\$000)	82,525	24,112	15,788	46,687	169,112
Direct Employment (FTE jobs)	296.25	102	95	0	493.25
Total Employment (FTE jobs)	704.25	220	171	169	1,264.25
Sales & use taxes (\$000)	1,013	287	167	376	1,843
Personal income taxes (\$000)	500	147	86	184	917